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L 05006-67 EWT(1) IJP(c) AT/GD
ACC NR: AT6020442 (N) SOURCE CODE: UR/0000/65/000/000/0115/0130

AUTHOR: Tsytovich, V. N.; Shapiro, V. D.

49

ORG: none

TITLE: Nonlinear stabilization of plasma beam instabilities

SOURCE: AN UkrSSR. Vzaimodeystviye puchkov zaryazhennykh chastits s plazmoy (Interaction of charged particle beams with plasma). Kiev, Naukova dumka, 1965, 115-130

TOPIC TAGS: plasma beam interaction, plasma instability, nonlinear plasma, plasmon

ABSTRACT: The study of plasma and interacting beam parameters shows that the stabilization of beams by nonlinear means is possible. The mechanism investigated in this connection is the pumping of excited oscillations into a nonresonant spectral region. It is assumed that the characteristic time of pumping is shorter than the instability development time, thus keeping the energy of the waves low. The spectral density time behavior is obtained by deriving the cross section for dispersion of Langmuir waves on the plasma particles. This is done both by use of the theory of growing amplitude excitations as well as by the quantum-mechanical approach (plasmons). The effects of nonlinearities are obtained from the dynamics of beam instabilities. It is shown that the beam can be accelerated by the excitation of internal electric fields. The analy-

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sis carried out in this work shows qualitatively that stabilization is possible in the absence of intense external noise. Orig. art. has: 39 formulas.

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 010/ OTH REF: 001

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

UR 0227-67 EWT(1) IJP(c) GG/AT

ACC NR: AP6030921 SOURCE CODE: UR/0207/66/000/004/0048/0055

AUTHOR: Tsytovich, V. N. (Moscow); Shapiro, V. D. (Khar'kov)

ORG: none

TITLE: Nonlinear theory for the passage of pulses of electromagnetic waves through a plasma boundary

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 4, 1966, 48-55

TOPIC TAGS: wave pulse, electromagnetic wave, transverse wave, longitudinal wave, plasma, plasma boundary, boundary effect

ABSTRACT: The role of boundary effects is investigated for the passage of pulses of electromagnetic waves through a plasma boundary. Cases of narrow and wide spectra are analyzed. Stochastic phases of transverse waves and generated longitudinal waves are assumed. The boundary effects may be used to generate longitudinal waves needed for the effective acceleration of particles in the plasma as well as for the modulation and changing of the spectrum of initial transverse waves. The application of boundary effects in diagnostics of turbulent plasma is pointed out. The authors thank Ya. B. Faynberg, M. S. Rabinovich, I. S. Danilkin,

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and M. D. Rayzer for their interest in the work and valuable comments. Orig. art. has: 5 figures and 37 formulas.

SUB CODE: 20/ SUBM DATE: 09Mar65/ ORIG REF: 006/ OTH REF: 001/

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACC NR: AP6022072 SOURCE CODE: UR/0141/66/009/003/0469/0478

AUTHOR: Liperovskiy, V. A.; Tsytovich, V. N.

ORG: Institute of Physics im. P. N. Lebedev, AN SSSR (Fizicheskiy institut AN SSSR)

TITLE: Nonlinear interaction of waves in plasma in the presence of strong transverse waves

SOURCE: IVUZ. Radiofizika, v. 9, no. 3, 1966, 469-478

TOPIC TAGS: plasma wave, plasmon, plasma research

ABSTRACT: The effects are considered of the induced dispersion of longitudinal waves in plasma, in the presence of strong transverse waves. It is proven that the spectrum of longitudinal waves shifts toward higher wave numbers k (lower $v_f^{\perp}$) also in the case of transverse waves in a homogeneous isotropic plasma. It is found that, in the process of 4-plasmon interaction, strong compensating effects (similar to those occurring in wave dispersion by particles) are possible. The interaction of Langmuir-type waves is used as an illustrating example. Orig. art. has: 2 figures and 52 formulas.

SUB CODE: 20 / SUBM DATE: 06Sep65 / ORIG REF: 009 / OTH REF: 001

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACC NR: AP6037069 SOURCE:CODE: UR/0056/66/051/005/1385/1388

AUTHOR: Tsytovich, V. N.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Nonlinear instability of optical frequencies in a partially ionized plasma

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 5, 1966, 1385-1388

TOPIC TAGS: nonlinear optics, plasma oscillation, astrophysics

ABSTRACT: A theoretical study was made of the nonlinear interaction of plasma beams and optical beams, whose frequencies are near the frequency (ω_{12}) of transition between inversely populated levels. Only the initial stage of development of a nonlinear instability was considered, and an invariant level population was assumed. It is indicted that rapidly excited plasma oscillations can provide a mechanism for the luminescence of the system, which then leads to an increase in the generation power. Such an increase for a powerful pulsed pinch discharge in a plasma was observed experimentally by S. G. Kulagin et al. (ZhETF, PvR, v. 3, no. 1, 1966, 12). The generation of frequencies differing from ω_{12} by the plasma frequency was observed experimentally by N. G. Basov and O. V. Bogdankevich (DAN SSSR, 168, 1966, 6) in an electron-beam-pumped semiconductor plasma. The anomalously

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high emission of the OH molecules at 1665, 1667, and 1720 MHz, recently observed in nebulae (H. Weiver et at., Nature, 209, 274, 1965; I. S. Shklovskiy, Astr. Circular, no. 372, June 1966, 1) may well indicate the occurrence of plasma oscillations there. Orig. art. has: 9 formulas.

SUB CODE: 20/ SUBM DATE: 11Mar66/ ORIG REF: 006/ OTH REF: 002/ ATD PRESS: 5107

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACC NR: AT6033041 SOURCE CODE: UR/2504/66/032/000/0112/0129

AUTHOR: Danilkin, I. S.; Kovrizhnykh, L. M.; Rayzer, M. D.; Tsytovich, V. N.

ORG: none

TITLE: Nonlinear effect in a plasma without collisions and possible prospects for their use

SOURCE: AN SSSR. Fizicheskiy institut. Trudy, v. 32, 1966. Fizika plazmy (Plasma physics), 112-129

TOPIC TAGS: nonlinear effect, plasma dynamics, plasma electromagnetic wave

ABSTRACT: The present article is of the review type (35 literature references) and the authors state that it is primarily based on the theoretical results of a series of previously published articles. After an extended mathematical introduction, the authors consider the subject of the induced dissipation of transverse waves and their transformation into longitudinal waves. The next two subsections deal with processes of disintegration and merging of waves in a plasma, and processes of three-plasma dissipation. The next main heading is the nonlinear transformation of transverse electromagnetic waves into longitudinal plasma waves. Following this is a treatment of the acceleration of clusters in a plasma using electromagnetic waves. The final section of the article concerns the possibility of the generation of transverse

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electromagnetic waves at the expense of nonlinear effects accompanying the passage of a beam through a plasma. "The questions treated here were brought to our attention by M. S. Rabinovich. An active part in working out questions in the theory of nonlinear effects was taken by A. K. Gaylitis. For many discussions touching on the problem, the authors are very grateful to Academician V. I. Veksler, M. S. Rabinovich, and Ya. B. Faynberg." Orig. art. has: 41 formulas.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 038/ OTH REF: 001

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACC NR: AT6033042 SOURCE CODE: UR/2504/66/032/000/0130/0164

AUTHOR: Tsytovich, V. N.

ORG: none

TITLE: Statistical acceleration of particles in a plasma

SOURCE: AN SSSR. Fizicheskiy institut. Trudy, v. 32, 1966. Fizika plazmy (Plasma physics), 130-164

TOPIC TAGS: particle acceleration, plasma flow, statistic analysis

ABSTRACT: This is a long article of the review type (34 pages, 111 literature references). It starts with a mathematical treatment of the problem of the statistical change of state of the particles in a plasma. Next is a treatment based on Cherenkov acceleration, followed by a consideration of acceleration by means of longitudinal oscillations of the plasma. A long section is devoted to nonlinear effects and the limits of application of induced acceleration. The next main heading is the statistical characteristics of the accelerated particles. A highly mathematical treatment is given to the problem of the acceleration of photons and neutrons. The author next treats the mechanism of acceleration in a weakly turbulent plasma placed in external electric and magnetic fields. The article concludes with a discussion of the application of the method to the heating and acceleration of

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particles under laboratory conditions, and in astrophysics. "The author expresses his deep indebtedness to Ya. B. Faynberg and V. D. Shapiro for discussion of the experimental work on acceleration of particles in a plasma; to V. L. Ginzburg, S. I. Syrovatskiy, S. B. Pikel'ner, I. S. Shklovskiy, and N. S. Kardashev for discussion of astrophysical applications. The author is sincerely grateful to V. I. Veksler, M. S. Rabinovich, and R. Z. Sardeyev for stimulating discussions of pertinent questions." Orig. art. has: 106 formulas and 6 figures.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 108/ OTH REF: 015

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACC NR: AT6033043 SOURCE CODE: UR/2504/66/032/000/0165/0172

AUTHOR: Danilkin, I. S.; Rayzer, M. D.; Tsytovich, V. N.

ORG: none

TITLE: Acceleration of particles with interaction between high frequency fields and a plasma

SOURCE: AN SSSR. Fizicheskiy institut. Trudy, v. 32, 1966. Fizika plazmy (Plasma physics), 165-172

TOPIC TAGS: particle acceleration, plasma magnetic field, traveling wave interaction

ABSTRACT: The present article analyzes several mechanisms for the acceleration of the individual particles of a plasma acted upon by a high frequency field. It considers the conditions under which data can be taken on the mechanism of acceleration, and offers an evaluation of the mean values of the energy which can be collected by the ions and the electrons. The article starts with a mathematical development of the problem of acceleration brought about by waves with a fixed phase in a weak high frequency field, and then goes on to a consideration of the same problem with waves of random phase in weak high frequency fields. It concludes with the derivation of mathematical expressions for the acceleration of particles in a strong high frequency field. "In conclusion the authors thank M. S. Rabinovich for discussion of the problem." Orig. art. has: 25 formulas.

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ACC NR: AT6020441 SOURCE CODE: UR/0000/65/000/000/0111/0115

58

AUTHOR: Tsytovich, V. N.; Shapiro, V. D.

ORG: none

TITLE: The interaction of an electron beam with an optically active medium

SOURCE: AN UkrSSR. Vzaimodeystviye puchkov zaryazhennykh chastits s plazmoy (Interaction of charged particle beams with plasma). Kiev, Naukova dumka, 1965, 111-115

TOPIC TAGS: electron beam, plasma resonance, plasma interaction, plasma density

ABSTRACT: The generation of oscillations in the visible and UV ranges is considered theoretically in the interacting system of a beam and an optically active plasma. The electron beam is of smaller density than the plasma and has a large thermal component. The plasma frequency is much smaller than that of the most rapidly growing harmonic, which is about equal to the characteristic frequency of the plasma. The spectrum of oscillations excited in the plasma is obtained from the quasilinear theory. At resonance, nearly all the energy of the beam goes into the kinetic energy of oscillators (i. e., atoms or ions of the plasma) exceeding the collisional transfer of energy to a large degree. A numerical example is given to show that very strong generation of light by this method is possible. It is shown that a beam with a density of 10^{14} cm^{-3} and a particle velocity of $3 \cdot 10^9$ cm/sec injected into a plasma with a density of 10^{19}

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cm^{-3} will generate 100 kw/cm^3 of power at 10^{16} sec^{-1} angular frequency (i. e., in the ultraviolet). Orig. art. has: 9 formulas.

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACC NR: AP6036026 SOURCE CODE: UR/0057/66/036/011/1915/1942

AUTHOR: Tsytovich,V.N.; Shvartsburg,A.B.

ORG: Physics Institute im. P.N.Lebedev, Moscow (Fizicheskiy institut im. P.N. Lebedeva)

TITLE: Nonlinear interaction of waves in a plasma in a strong external magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 11, 1966, 1915-1942

TOPIC TAGS: nonlinear plasma, turbulent plasma, magnetoactive plasma, plasma

ABSTRACT: The scope of this 27 page treatise on nonlinear interactions of waves in magnetized plasmas is indicated by the following section and subsection headings: 1) Nonlinear interaction; 2) Nonlinear scattering; 3) Induced scattering of high frequency waves on ions, a) Scattering through virtual plasma waves of plasma waves and extraordinary waves into plasma waves and extraordinary waves at the zeroth harmonic; 4) Scattering through plasma waves at the first harmonics; 5) Induced nonlinear scattering of waves on ions through virtual quasitransverse waves; 6) Induced scattering of low frequency plasma waves on ions; 7) Induced scattering of high frequency waves on electrons; 8) Decay processes, a) Decay of plasma waves into low frequency waves, b) Decay of plasma waves into transverse waves and vice versa, d) Decay of transverse waves into transverse waves. The calculations are based on a modification for the case of weakly damped waves in a magnetized plasma under conditions of weak

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space dispersion of the general method developed in a series of papers by A.Gaylitis and V.N.Tsytovich (ZhETF, 46, 1726,1964; 47,1468,1964) and by the present authors (ZhETF, 49,795,1965). Three types of waves are discussed: plasma waves, ordinary waves, and extraordinary waves. Under certain conditions the cross section for scattering on ions can exceed that for scattering on electrons. The interaction of waves propagating nearly perpendicularly to the magnetic field can somewhat exceed that of waves propagating parallel to the field. Nonlinear scattering involving virtual waves of different types is discussed and it is shown that induced scattering at the first harmonics of the ion Larmor frequency can exceed that at the zeroth harmonic. The possibility of nonlinear amplification of plasma oscillations at frequencies near the electron cyclotron resonance is discussed. Scattering on ions through virtual quasitransverse waves can exceed that through quasilongitudinal waves; the conditions that this be the case are found, and the induced nonlinear scattering on ions of low frequency plasma waves is discussed. The scattering of waves on the plasma electrons is also discussed. Probabilities are given for a number of decay processes, and equations are presented in an appendix with which probabilities of other decay processes can be calculated. Orig. art. has: 133 formulas, and 5 figures.

SUB CODE: 20 SUBM DATE: 17May65 ORIG. REF: 029 OTH REF: 001

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACC NR: AP6033428 SOURCE CODE: UR/0057/66/036/010/1896/1900

AUTHOR: Tsytovich,V.N.; Shvartsburg,A.B.

ORG: none

TITLE: On the theory of the excitation and propagation of electromagnetic waves in a weakly turbulent plasma

SOURCE: Zhurnal tekhnicheskoy fiziki, v.36, no. 10, 1966, 1896-1900

TOPIC TAGS: turbulent plasma, plasma diagnostics, plasma stability, double refraction, hydrodynamic theory, perturbation method

ABSTRACT: The authors employ the hydrodynamic equations for the plasma electrons to discuss high frequency perturbations of a weakly turbulent cold plasma. An expression containing terms up to the third degree in the electric field strength is obtained for the current in the plasma. It is assumed that the random electric field due to the turbulence is large compared with the perturbation field, and only terms linear in the latter are retained. A formula is given for the dielectric tensor of a plasma containing both longitudinal and transverse turbulence. The imaginary parts of the dielectric tensor lead to the known decay instabilities. The expression obtained for the increment for quasilongitudinal waves in the presence of transverse turbulence agrees with that obtained in the random phase approximation by V.A.Liperovskiy and V.N.Tsytovich (Preprint FIAN, A-120, 1965) but is valid beyond the limits of appli-

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cability of that approximation. New types of instabilities are found, which cannot be described in the random phase approximation. Conditions for the appearance of these instabilities in a plasma containing anisotropic longitudinal or transverse turbulence are found and expressions for their increments are derived. The double refraction of high frequency waves in a plasma containing anisotropic longitudinal turbulence is discussed. The double refraction in a turbulent plasma may prove useful in plasma diagnostics. Orig. art. has: 24 formulas.

SUB CODE: 20 SUBM DATE: 25Feb66 ORIG. REF: 008 OTH REF: 001

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACC NR: AP6036767 SOURCE CODE: UR/0053/66/090/003/0435/0489

AUTHOR: Tsytovich, V. N.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR (Fizicheskiy institut AN SSSR)

TITLE: Nonlinear effects in a plasma

SOURCE: Uspekhi fizicheskikh nauk, v. 90, no. 3, 1966, 435-489

TOPIC TAGS: plasma interaction, plasma wave, nonlinear plasma, ionized plasma, plasma decay, plasma oscillation

ABSTRACT: This is a review article with emphasis on the nonlinear interaction between waves having random phases in a plasma. The nonlinearity is assumed weak, and the energy of the interacting waves is assumed to be much larger than the energy of the equilibrium fluctuations in the plasma. The sections headings are as follows: Introduction (a. Object of investigation, b. Nonlinear effects and plasma physics, c. Problems in the procedure of calculating nonlinear effects). I. General theory of interaction of waves in spatially dispersive media (1. Concept of the number of waves. Connection between the spontaneous and induced processes. 2. Processes of radiation, scattering, and decay. 3. Kinetic equation for waves. 4. Nonlinear plasma current and probability of decay processes. 5. Nonlinear and Compton scattering and their interference). II. Nonlinear interaction of waves in an isotropic plasma (6. Stimu-

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ACC NR: AP6036767

lated scattering of Langmuir waves with transformation into Langmuir waves on the plasma electrons. 7. Nonlinear scattering via virtual transverse waves. 8. Induced scattering of Langmuir waves by ions. 9. Induced scattering of ion-sound waves. 10. Nonlinear interaction of Langmuir and ion-sound waves. 11. Nonlinear interaction of transverse waves. 12. Nonlinear interaction of transverse and Langmuir waves. 13. Nonlinear interaction of transverse and ion-sound waves). Conclusion. Some unsolved problems in the theory of nonlinear interaction are mentioned in the conclusion. Orig. art. has: 10 figures and 142 formulas.

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B

AUTHOR: Liperovskiy, V.A.; Tsytovich, V.N.

ORG: Physics Institute im. P.N.Lebedev, Moscow (Fizicheskiy institut)

TITLE: On the oscillation spectra of a weakly turbulent plasma

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 4, 1966, 575-587

TOPIC TAGS: turbulent plasma, unstable plasma, plasma oscillation, plasma stability, dispersion equation, nonlinear plasma, nonlinear theory

ABSTRACT: In an unstable plasma, there can arise a quasi-equilibrium state of weak turbulence with a self-consistent distribution of particles and waves. Such quasi-stationary states have been previously discussed for different types of waves (instabilities) by the authors (ZhTF, 35, 773, 1965; PMTF, No.5, 15, 1965). Here they discuss the stability of quasistationary states of different types with respect to excitation of slow plasma oscillations (which are called "second sound") and derive the spectra of the second sound waves. The calculations are based on equations given by L.M.Kovrizhnykh and V.N.Tsytovich (ZhETF, 46, 2212, 1964; 47, 1454, 1964), which describe the effects of the nonlinear interaction of the waves in the plasma and in which spontaneous effects are neglected compared with induced effects. Dispersion equations are derived for second sound in different quasistationary states and conditions for the stability of the states are given. It is shown that the quasistationary

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state noted by V.I.Petviashvili (DAN SSR, 153, 1295, 1963) and B.B.Kadomtsev (Voprosy teorii plasmy, vyp.4, str.285, Gosatomizdat, 1964), which arises from nonlinear scattering on plasma ions of ionic sound generated by an electric current in a plasma, can be unstable with respect to excitation of second sound, and that the quasistationary states associated with decay of transverse waves into longitudinal waves and of longitudinal waves into sound can be stable. The one-dimensional quasistationary state associated with decay of longitudinal waves into sound is found to remain stable in the presence of three-dimensional perturbations. The authors thank V.P.Silin for his interest in the work. Orig. art. has: 41 formulas.

SUB CODE: 20 SUBM DATE: 16Apr65 ORIG. REF: 023 OTH REF: 001

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

L 8218-66 EWT(l)/EWG(m) IJP(c) AT SOURCE CODE: UR/3137/64/000/076/0001/0014

ACC NR: AT5022301

AUTHOR: Tsytovich, V. N.; Shapiro, V. D.

ORG: Academy of Sciences UkrSSR, Physicotechnical Institute (Akademiya nauk UkrSSR, Fiziko-tekhnicheskiy institut)

TITLE: Nonlinear stabilization of plasma beam instabilities

SOURCE: AN UkrSSR. Fiziko-tekhnicheskiy institut. Doklady, no. 076/P030, 1964. Nelineynaya stabilizatsiya puchkovykh neustoychivostey plazmy, 1-14

TOPIC TAGS: plasma beam, plasma wave, plasma instability

ABSTRACT: The possibility of the stabilization of beams in plasmas is discussed, especially for the case where ion temperature greatly exceeds the electron temperature. The chief mechanism responsible for limiting beam or stream instabilities is wave scattering by a large number of ions. The problem is discussed in terms of the spectral shift of the plasma waves from the resonant to nonresonant regions. If the shift occurs in a period less than or of the order of the time of growth of the waves, then stabilization occurs. This occurs in some instances without the presence of strong external noise. General stability criteria are derived from the nonlinear kinetic equations for the beams with large velocity spread. It is shown that the small velocity spread leads to a modified criterion of instability where the electron thermal velocity exceeds that of the ions. Orig. art. has: 56 formulas.

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ACC NR: AP5027265 SOURCE CODE: UR/0207/65/000/005/0015/0022

AUTHORS: Liperovskiy, V. A. (Moscow); Tsytovich, V. N. (Moscow)

ORG: none

TITLE: On the decay of longitudinal Langmuir plasma oscillations into ion-acoustic waves

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1965, 15-22

TOPIC TAGS: turbulent plasma, nonlinear theory, nonlinear plasma, unstable plasma, plasma heating

ABSTRACT: In view of the importance of nonlinear processes arising as a result of the high intensity of oscillations excited by beam instabilities, of the interest in proposed turbulent heating schemes, and in connection with a number of other phenomena, several theoretical investigations of nonlinear plasma behavior have recently been carried out. This subject is further investigated in the present paper, in which several one-dimensional self-consistent problems concerning the decay or combination of Langmuir and ion-acoustic waves are considered. It is shown that instability in a turbulent spectrum with a high level of excited Langmuir waves leads both to the excitation of ion-acoustic waves and to the appearance of side-bands separated by a frequency on the order of ω_{oi} from the electron plasma

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frequency ω_{oe}. This qualitative change in the wave spectrum may serve as a direct indication of the excitation of ion-acoustic waves in the system. Orig. art. has: 2 figures and 34 formulas.

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.; SHVARTSBURG, A.B.

Theory of nonlinear interaction of waves in a magnetoactive anisotropic plasma. Zhur. eksp. i teor. fiz. 49 no.3:797-806 S '65. (MIRA 18:10)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

GAYLITIS, A.; TSYTOVICH, V.N.

Theory of nonlinear interaction between transverse and longitudinal plasma waves. Izv. vys. ucheb. zav.; radiofiz. 7 no.6: 1190-1193 '64. (MIRA 18:3)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

KOVRIZHNYKH, L.M.; TSYTOVICH, V.N.

Effects of the decay of transverse electromagnetic waves in a plasma. Zhur. eksp. i teor. fiz. 47 no.4:1454-1462 O '64. (MIRA 18:1)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

GAYLITIS, A.; TSYTOVICH, V.N.

Radiation due to the scattering of charged particles by electromagnetic waves in an isotropic plasma. Zhur. eksp. i teor. fiz. 47 no.4:1468-1482 O '64. (MIRA 18:1)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

KOVRIZHNYKH, L.M.; TSYTOVICH, V.N.

Nonlinear theory of the interaction between electron beams and transverse waves in a plasma. Zhur. tekh. fiz. 35 no.1:14-25 Ja '65. (MIRA 18:3)

1. Fizicheskiy institut imeni Lebedeva AN SSSR, Moskva.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

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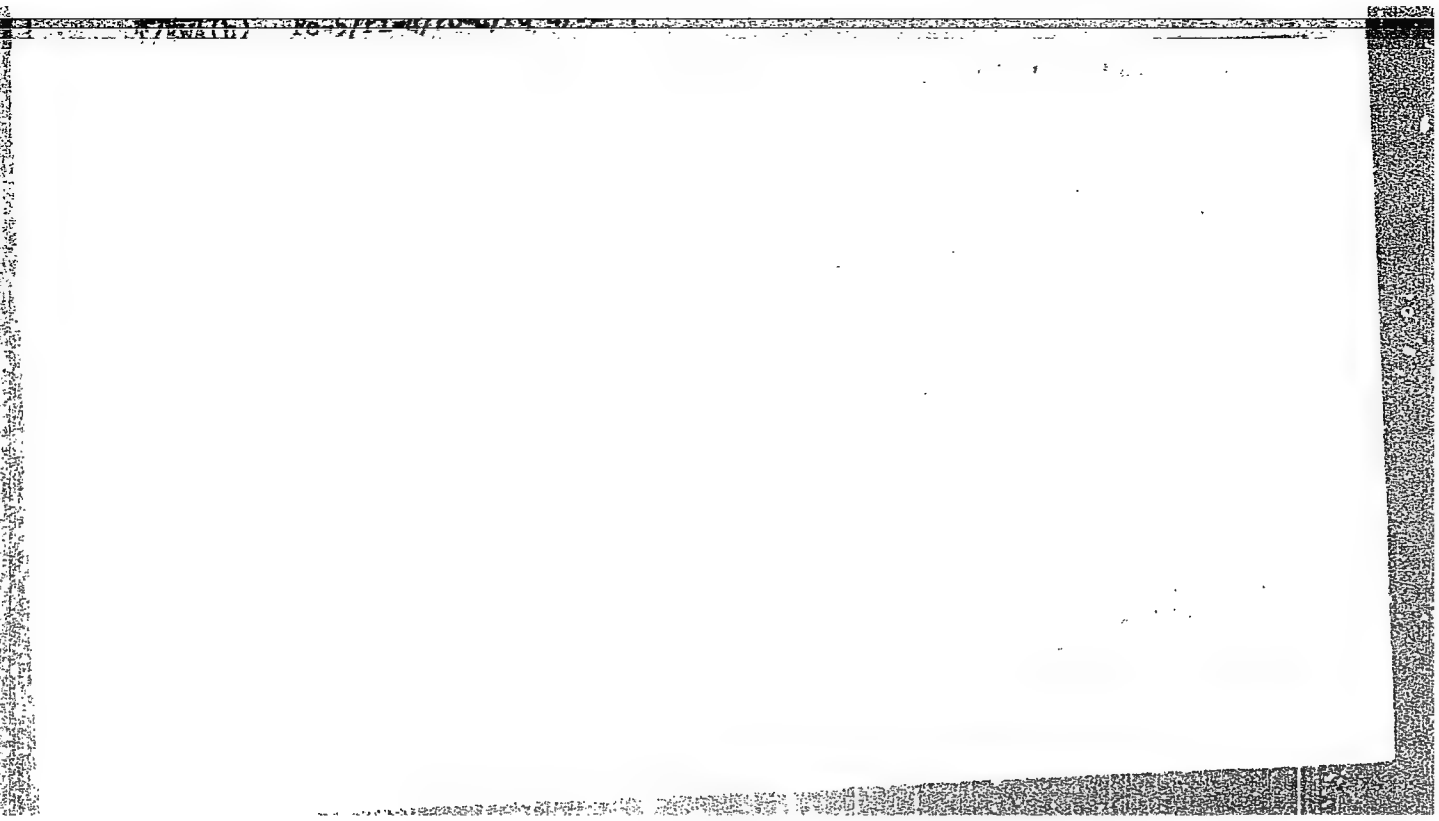

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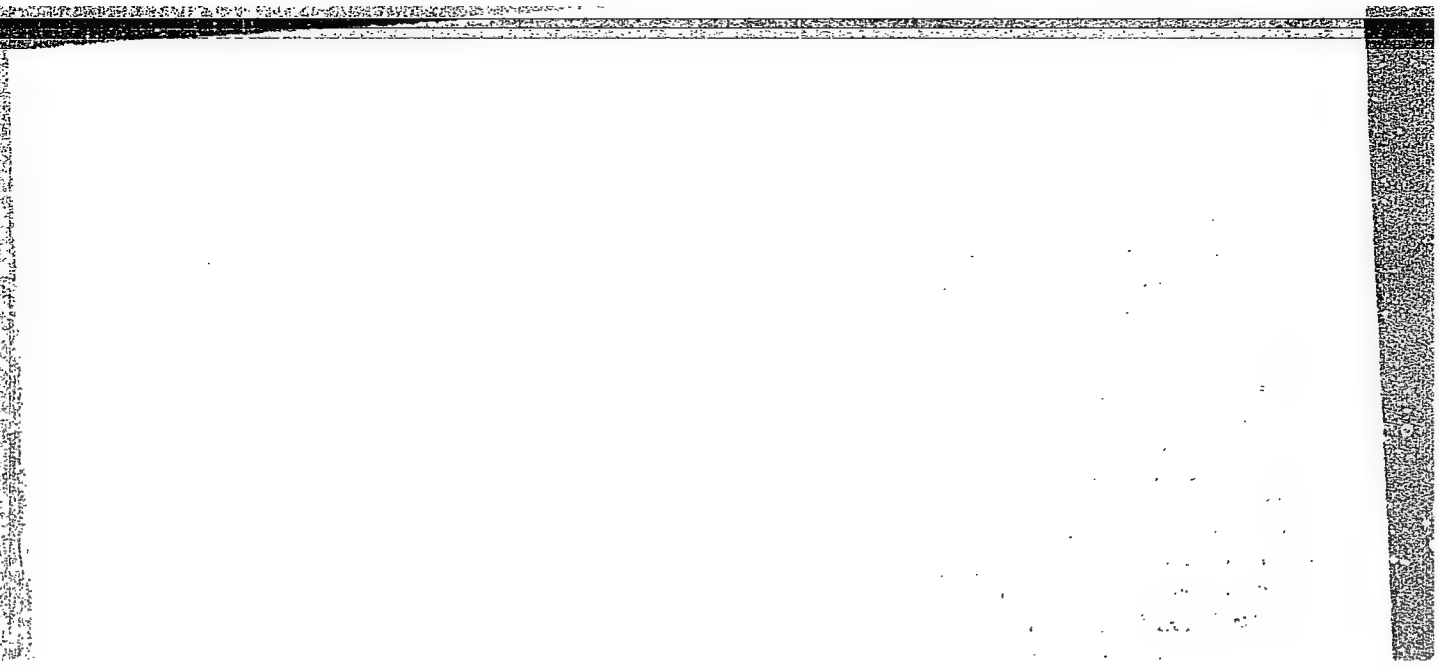

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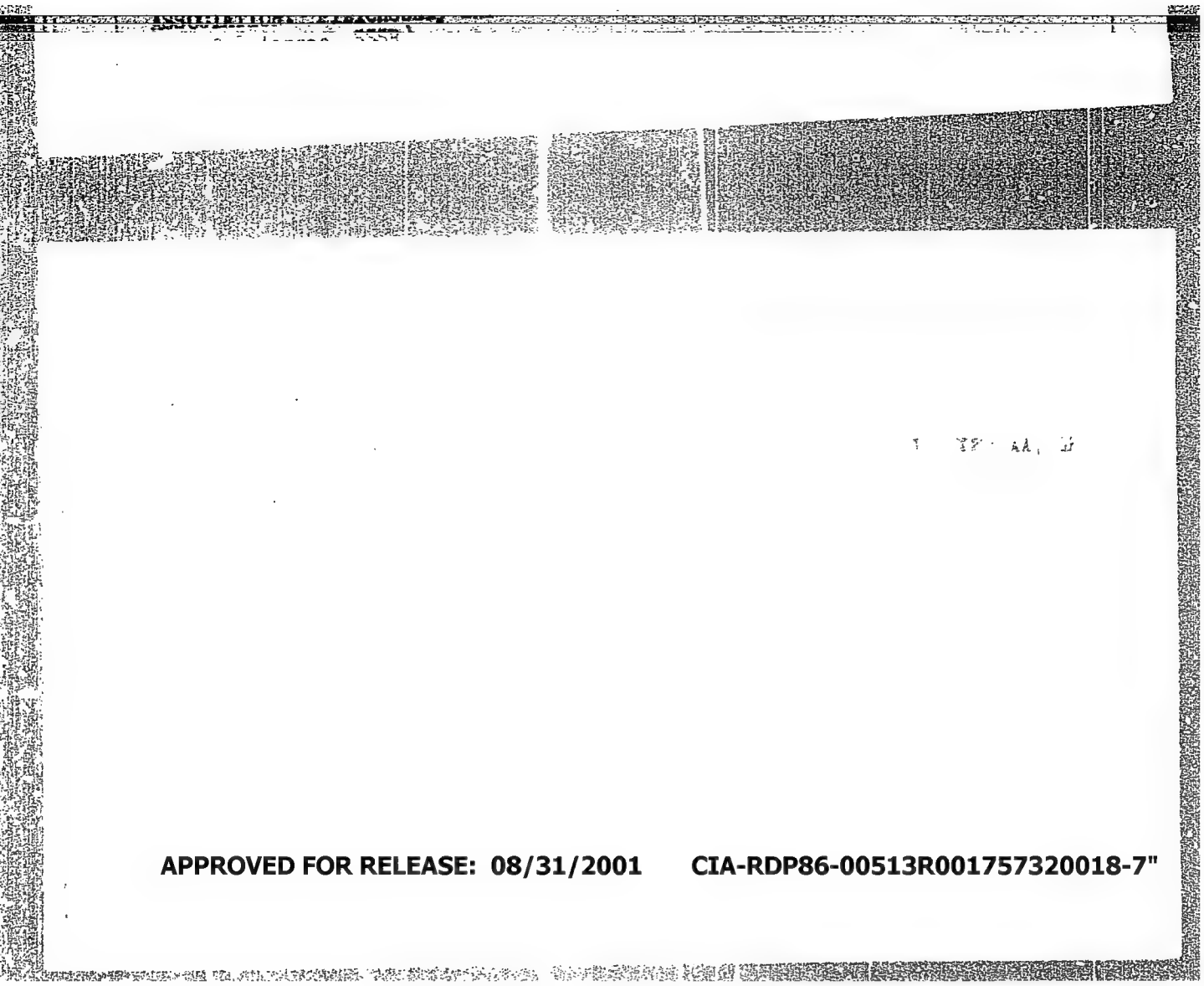

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.

Theory of cyclotron radiation of ions in a plasma. Zhur. tekh. fiz. 34 no.9:1701-1705 S '64. (MIRA 17:10)

1. Fizicheskiy institut imeni Lebedeva, Moskva.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.

Mechanism underlying plasma turbulence and cosmic ray acceleration. Astron. zhur. 42 no.1:33-41 Ja-F '65. (MIRA 18:2)

1. Fizicheskiy institut AN SSSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

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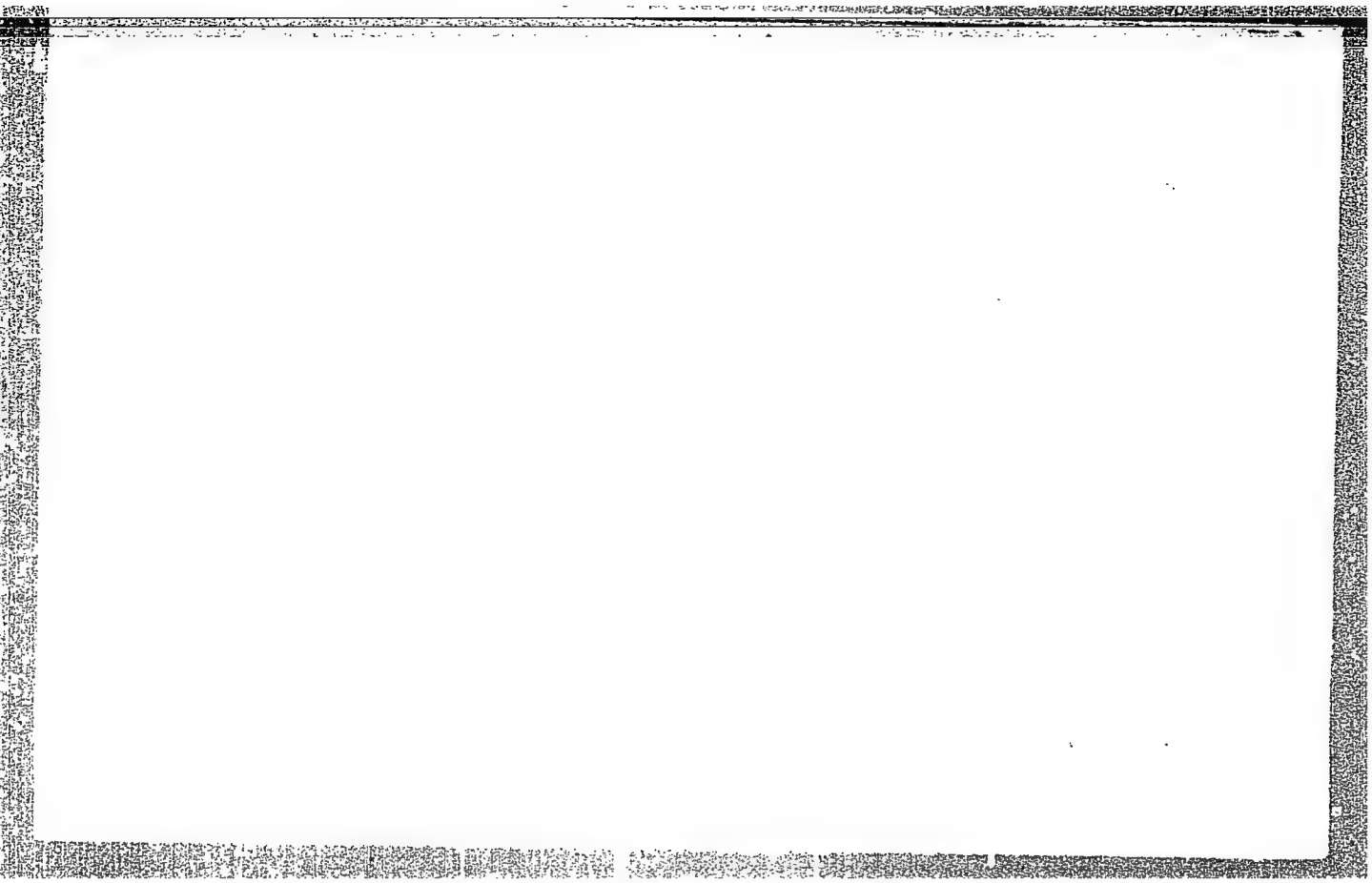

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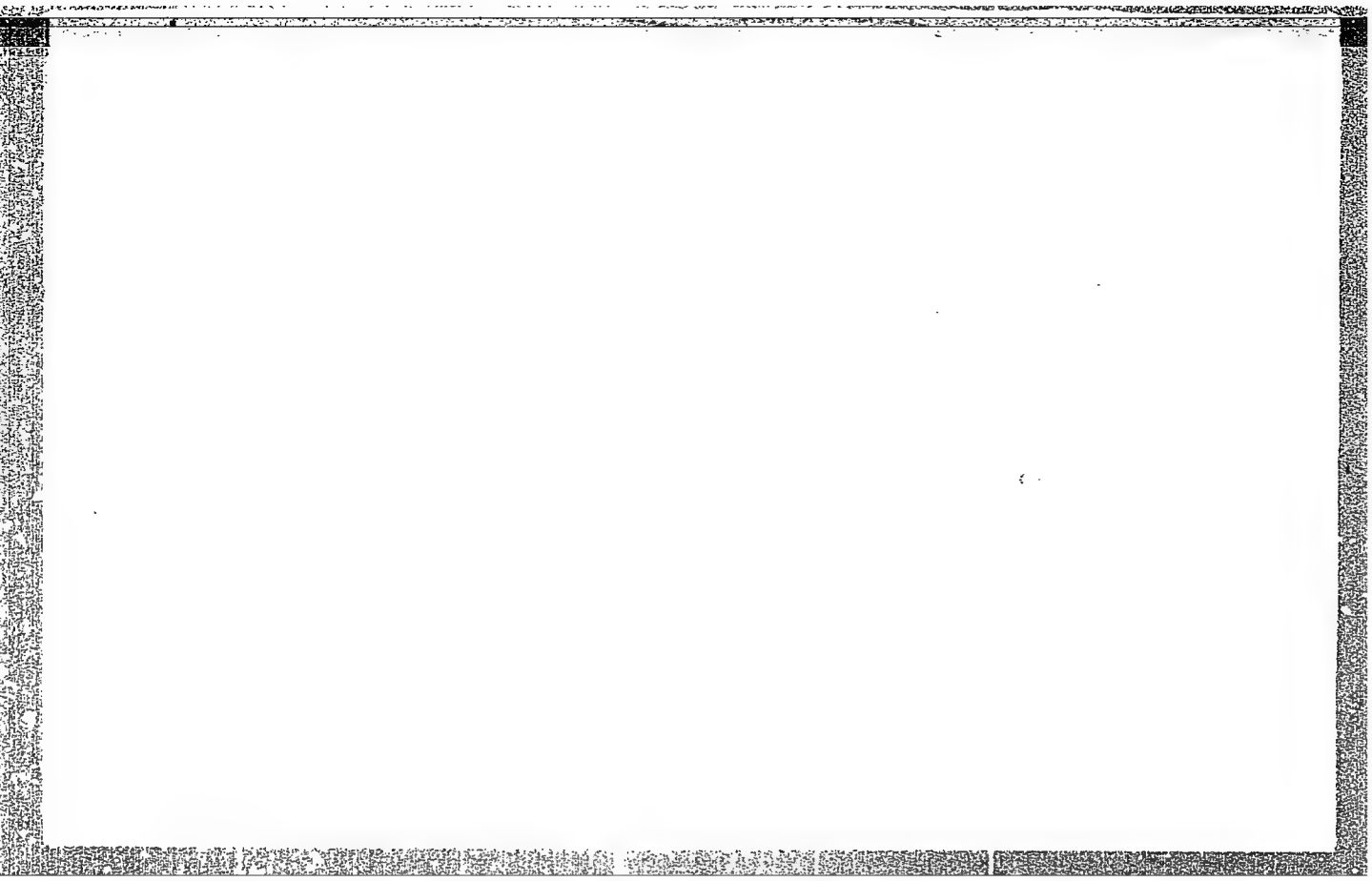

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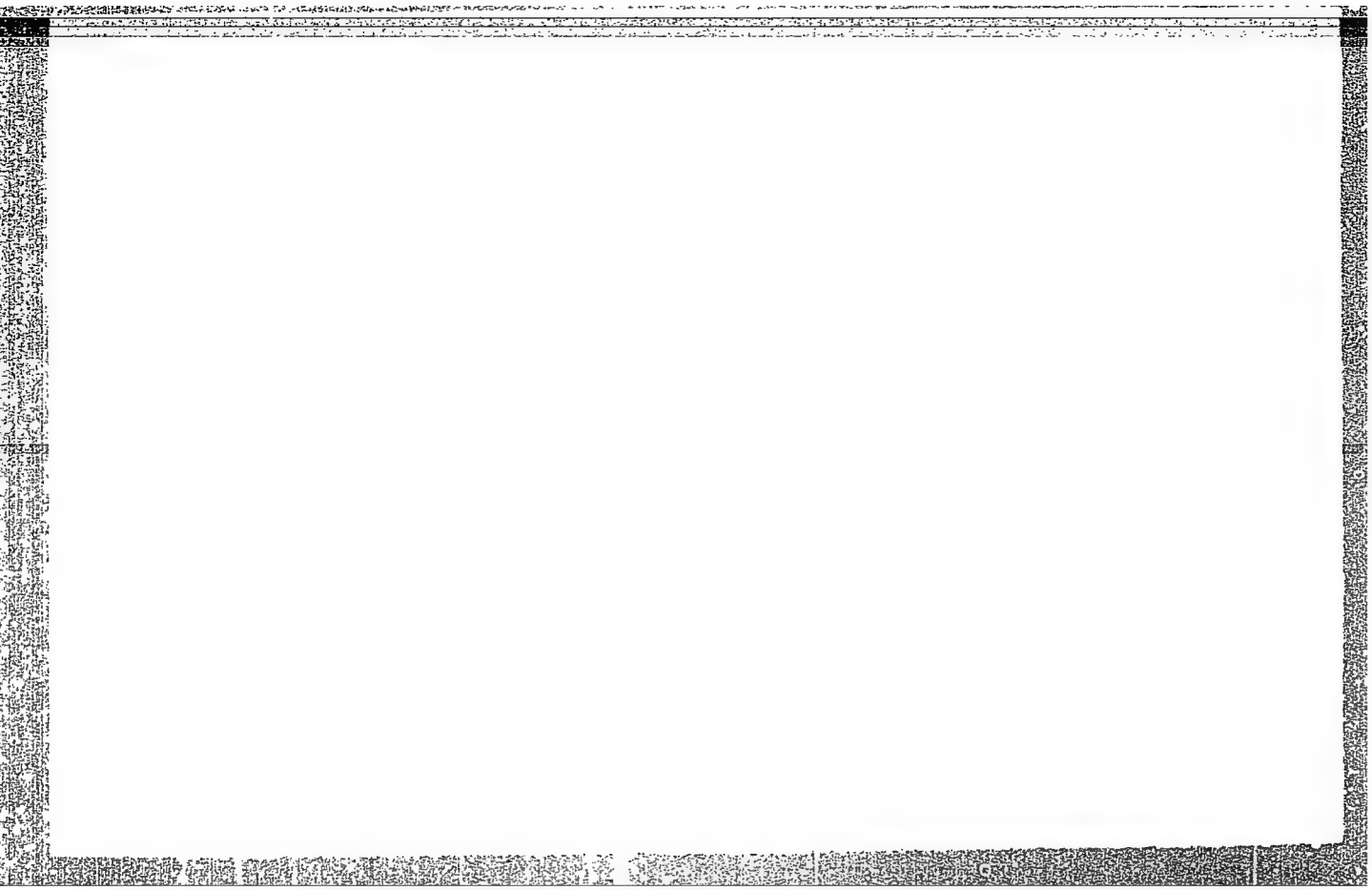

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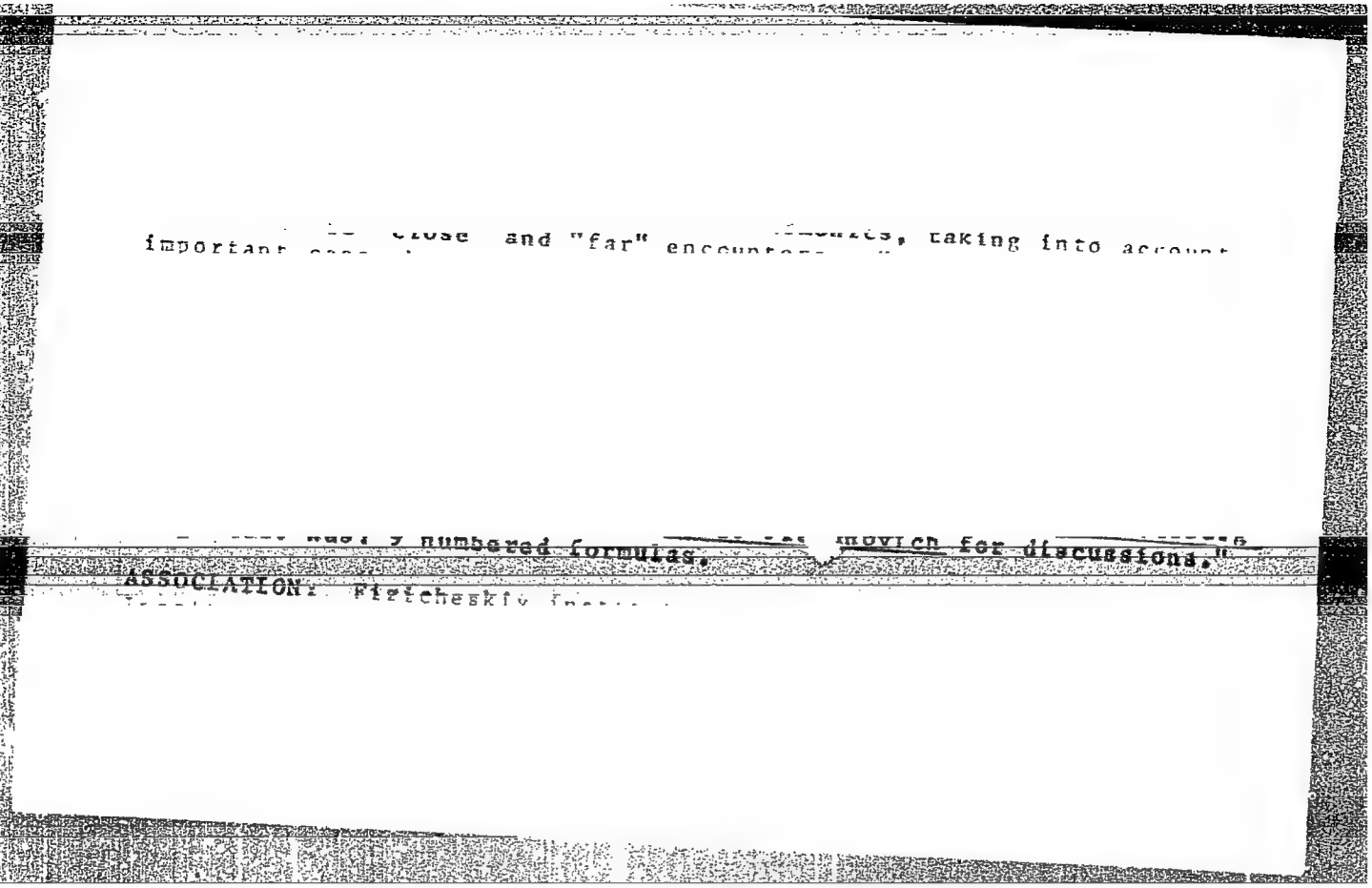

important [illegible] close and "far" encounters [illegible], taking into account

[illegible] numbered formulas. [illegible] Movich for discussions."

ASSOCIATION: Fizicheskiy f[illegible]

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

GAYLITIS, A.K.; TSYTOVICH, V.N.

Acceleration by radiation and the generation of fast particles under cosmic conditions. Part 3: Time measurements of the intensity of radio-emission sources. Astron. zhur. 41 no.3: 452-463 My-Je '64. (MIRA 17:6)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.; SHAPIRO, V.D.

Interaction between an electron beam and an optically active medium. Zhur.tekh. fiz. 34 no.4:764-767 Ap '64. (MIRA 17:4)

1. Fizicheskiy institut imeni Lebedeva, Moskva.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

RUBIN, S.B.; TSYTOVICH, V.N.

Nonlinear energy losses by a charge in a plasma. Zhur. tekh. fiz. 39 no.1:3-10 Ja '64. (MIRA 17:1)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

GAYLITIS, A.K.; TSYTOVICH, V.N.

Effect of the medium on synchrotron acceleration of relativistic particles. Izv.vys. ucheb.zav.; radiofiz. 6 no.6:1103-1114 '63. (MIRA 17:4)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.

Effect of radiation on relativistic particles moving in a magnetic field. Izv. vys. ucheb. zav.; radiofiz. 6 no.5:918-927 '63.
(MIRA 16:12)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.

Induced resonance scattering and radiation in a medium. Dokl. AN SSSR 154 no.1:76-79 Ja'64. (MIRA 17:2)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR. Predstavleno akademikom I.Ye. Tammom.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACCESSION NR: AP4009914 S/0057/64/034/001/0003/0010

AUTHOR: Rubin, S.B.; Tsy*tovich, V.N.

TITLE: On the non-linear energy loss by a charge moving through a plasma

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.1, 1964, 3-10

TOPIC TAGS: plasma, cold plasma, non-linear waves, moving charge in plasma, charge cluster

ABSTRACT: The relativistic motion of a distribution of charge (cluster of charged particles) through a cold plasma is treated in the hydrodynamic approximation. Only the motion of the electrons is considered, the role of the ions being only to assure that the plasma as a whole is neutral. The dimensions of the moving charge distribution may be comparable with the wavelength of the waves it excites; therefore non-linear effects may be important, and these are taken into account. Only such motions are considered as do not give rise to multi-velocity flow (turbulence). The relativistic hydrodynamic equations are written in cylindrical coordinates. The moving charge distribution is transformed to rest at the origin of coordinates, and it is assumed that the azimuthal velocity remains zero. Maxwell's equations are in-

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ACC.NR: AP4009914

troduced and two non-linear equations are derived for two velocity functions. One of these functions is the usual relativistic quantity $(1-v^2)^{-1/2}$ and the other is essentially the stream function. The electromagnetic field strengths are expressed in terms of these velocity functions. The non-linear equations for the plasma velocity are linearized by assuming the dependent variables to differe only slightly from their undisturbed values. The linearized equations are solved and an expression is obtained for the rate of energy loss by the moving charge. The rate of energy loss is proportional to the square of the total charge, in agreement with the usual linear theory. The non-linear plasma equations, of course, cannot be solved in general. Two special cases are discussed: 1) the longitudinal dimension of the moving charge is small, although its transverse dimensions are not; 2) the transverse dimensions of the moving charge are small, although its longitudinal dimension is not. Conditions for the appearance of multi-velocity flows are quoted from earlier work (V.N.Tsy*tovich,DAN SSSR,142,No.63,1962) and it is concluded that in the ultra-relativistic case there is a wide range of conditions in which the non-linear effects are important and turbulence does not develop. For case 1) the solution is completed and an involved expression is obtained for the rate of energy loss by the moving charge. The equations for case 2) are simplified by expanding in powers of the radius and retaining only the lowest order terms. The equations are reduced to those

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ACC.NR: AP4009914

of a one dimensional problem which, it is asserted, can be treated as was case 1). /Abstracter's note: The exposition is this section relies heavily on the earlier work cited above./ It is shown that by assuming an expression for one of the velocity functions, the other velocity function and the corresponding charge distribution can be obtained. An example is worked through and a very involved expression is obtained for the charge distribution. "The authors are sincerely grateful to V.I.Veksler for continued interest and numerous discussions." Orig.art.has: 52 formulas.

ASSOCIATION: none

SUBMITTED: 10Dec62 DATE ACQ: 10Feb64 ENCL: 00

SUB CODE: PH NR REF SOV: 003 OTHER: 000

Card 3/3

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.

Acceleration of charged particles by plasma waves. Izv. vys. ucheb.zav.; radiofiz. 6 no.3:641-644 '63. (MIRA 16:9)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.
(Plasma (Ionized gases))

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

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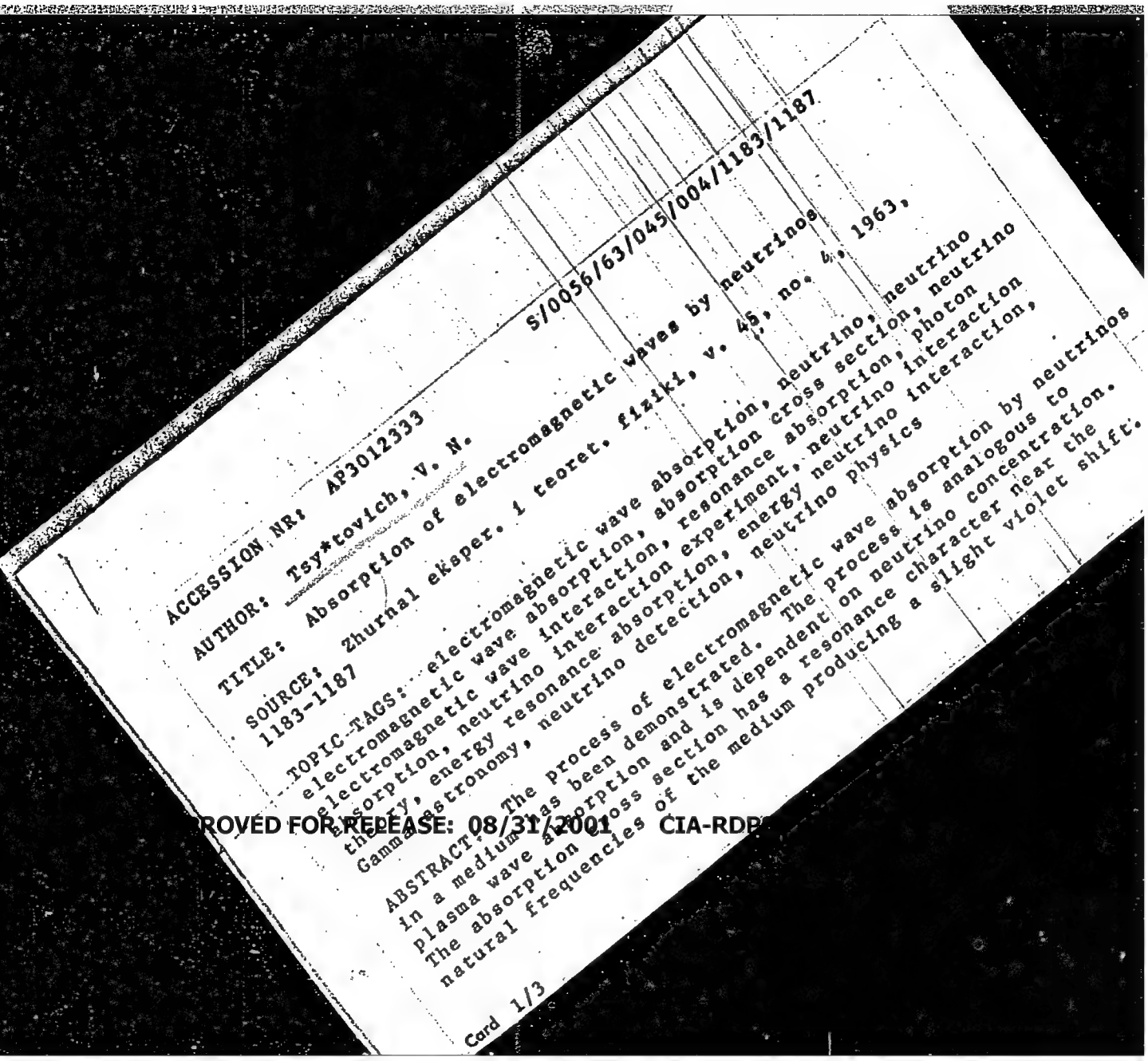

S/0056/63/045/004/1183/1187

ACCESSION NR: AP3012333

AUTHOR: Tsy*tovich, V. N.

TITLE: Absorption of electromagnetic waves by neutrinos

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 45, no. 4, 1963, 1183-1187

TOPIC TAGS: electromagnetic wave absorption, neutrino, neutrino electromagnetic wave absorption, absorption cross section, photon electromagnetic wave interaction, resonance absorption, neutrino absorption, neutrino interaction experiment, energy neutrino interaction, Gamma astronomy, neutrino detection, neutrino physics

ABSTRACT: The process of electromagnetic wave absorption by neutrinos in a medium has been demonstrated. The process is analogous to plasma wave absorption and is dependent on neutrino concentration. The absorption cross section has a resonance character near the natural frequencies of the medium producing a slight violet shift.

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ACCESSION NR: AP3012333

The effect which obtains for radio waves, optical frequencies, and nuclear resonance absorption is very slight. To observe the effect, it is necessary that the absorption line be as narrow as possible. Observation can be carried out in principle by a comparison of line intensities with and without neutrinos and by asymmetry of the effect. The effect can be amplified by multiple passage of radiation through the neutrino region. In contract to other known ways of neutrino detection with an energy threshhold of 10—50 kev, neutrino absorption of photons has no threshhold and is more efficient at low energies at which neutrino accumulation is possible. Astrophysical applications of the effect are considered, and it is noted that gamma astronomy of discrete lines of nuclear resonance can yield information on neutrinos in hyperdense stars. "The author thanks V. L. Ginzburg, V. I. Veksler, and G. T. Zatsepin for their interest in the work and their discussions." Orig. art. has: 10 formulas.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences SSSR)

Card 2/3

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACCESSION NR: AP3004316 S/0033/63/040/004/0612/0624

AUTHOR: Tay*tovich, V. N.

TITLE: Acceleration by radiation and the problems of generation of fast particles in cosmic conditions

SOURCE: Astronomicheskiy zhurnal, v. 40, no. 4, 1963, 612-624

TOPIC TAGS: magnetically active plasma, Fermi acceleration, magnetohydrodynamic wave, radiation acceleration, particle charge, radiation pressure, Cherenkov radiation, Bre msstrahlung, transversal wave, quasilongitudinal oscillation

ABSTRACT: The study of fast cosmic particles is connected with three parameters: the medium, the radiation, and the fast particles. The medium, where the particle motion occurs, is a magnetically very active plasma. The Fermi acceleration in the form of magnetohydrodynamic waves is the boundary case of radiation acceleration. The force acting on the particle charge can be greater in the medium than the radiation pressure; it depends upon the wave length and the radius of the particle. A charged particle moving within a vacuum cannot emit and absorb electromagentic waves; therefore, only a dispersion of electromagnetic waves takes place. In the medium an absorption and an emission are possible when the condition of Cherenkov radiation

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ACCESSION NR: AP3004316

is fulfilled, i.e., when the particle velocity is higher than the wave velocity. In a magnetically active plasma with Cherenkov radiation and absorption, processes of magnetic bremsstrahlung including radiation and absorption are possible. The radiation action depends upon the particle charge, the wavelength, the ratio of the wave velocity to the particle velocity, and the particle energy. The solution of the equation of interaction shows that the acceleration by radiation takes place when a difference exists between the energies obtained by the particle in collisions; and the mechanism of the radiation action on the particle is the boundary case of the Fermi mechanism. Radio emission in the cosmos penetrates into plasma and is there transformed into plasma oscillations. A transformation of transversal waves into plasma oscillations is possible because of nonlinear interaction of waves after dispersion on inhomogeneities. The plasma waves in a magnetic field correspond to the so called quasi-longitudinal oscillations. The acceleration of a particle which moves with a nonrelativistic velocity along the force lines is given by a formula. Plasma waves within a magnetically active plasma have great refraction indices, and under these conditions the accelerative effect generates the ordinary and extraordinary waves. The problem of Alfven waves and injection as sources of particle acceleration is discussed with transformation of the formulas developed earlier. The discussion resulted in the conclusion that the energy density of particles cannot exceed the energy density of the radiation. Orig. art. has: 3 figures and 37 formulas.

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APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACCESSION NR: AP3004316

ASSOCIATION: Fizicheskiy institut im. Lebedeva Akademii nauk SSSR (Institute of Physics, Academy of Sciences SSSR)

SUBMITTED: 04Nov62	DATE ACQ: 20Aug63	ENCL: 00
SUB CODE: AS	NO REF SOV: 012	OTHER: 001

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ACCESSION NR: AP4017032 S/0141/63/006/006/1103/1114

AUTHORS: Gaylitis, A. K.; Tsy*tovich, V. N.

TITLE: Effect of the medium on the synchrotron acceleration of relativistic particles

SOURCE: IVUZ. Radiofizika, v. 6, no. 6, 1963, 1103-1114

TOPIC TAGS: relativistic particle, synchrotron acceleration, relativistic electron, radio astronomy, acceleration by radiation, optical synchrotron radiation, synchrotron electron loss, Compton effect, inverse Compton effect, earth radiation belt, chromosphere flare,

ABSTRACT: The authors study the acceleration of relativistic electrons moving in a magnetic field, brought about by transverse electromagnetic waves for which the deviation of the dielectric constant from unity can be appreciable. The energy acquired by the particle

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ACCESSION NR: AP4017032

is calculated and the dependence of the particle acceleration on its energy is analyzed. The possible role played by such an acceleration mechanism in discrete radioastronomy sources is considered. It is pointed out that ultrarelativistic electrons can become selectively accelerated by transverse electromagnetic waves and thus offset possible synchrotron losses. The fact cited as evidence in favor of this assumption is that the Crab nebula shows no variation in the optical synchrotron radiation, although synchrotron losses of electrons should be appreciable in this energy region. It is also pointed out that acceleration by transverse waves during the initial stage of supernova envelope expansion resolves some of the difficulties connected with the inverse Compton effect. It is deduced from the results of the article that it is possible for electrons to become accelerated to an energy 2--10 MeV in the internal regions of the outer radiation belt. Consequently fast electrons should be produced whenever radio emission from a chromosphere flare passes through the inner zone of the radiation belt.

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.

Theory of the motion of charges along the axis of a channel in a medium. Zhur. tekh. fiz. 33 no.7:795-800 Jl '63. (MIRA 16:9)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR, Moskva.
(Plasma (Ionized gases)) (Electromagnetic waves)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.

Acceleration by radiation and the generation of fast particles in outer space. Astron.zhur. 40 no.4:612-624 Jl-Ag '63. (MIRA 16:8)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR.
(Cosmic rays)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.

Acceleration of electrons in the earth's radiation belts.
Geomag. i aer. 3 no.4:616-625 Jl-Ag '63 (MIRA 16:11)

1. Fizicheskiy institut imeni P.N.Lebedeva AN SSSR.

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTOVICH, V.N.

Absorption of electromagnetic waves on neutrinos. Zhur. eksp. i teor. fiz. 45 no.4:1183-1187 O '63. (MIRA 16:11)

1. Fizicheskiy institut imeni P.N.Lebedeva AN SSSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

SVETOZAROVA, G.I.; TSYTOVICH, V.N.

Spacial dispersion of relativistic plasma in a magnetic field.
Izv. vys. ucheb. zav.; radiofiz. 5 no.4:658-670 '62. (MIRA 16:7)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR.
(Plasma (Ionized gases)) (Magnetic fields)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

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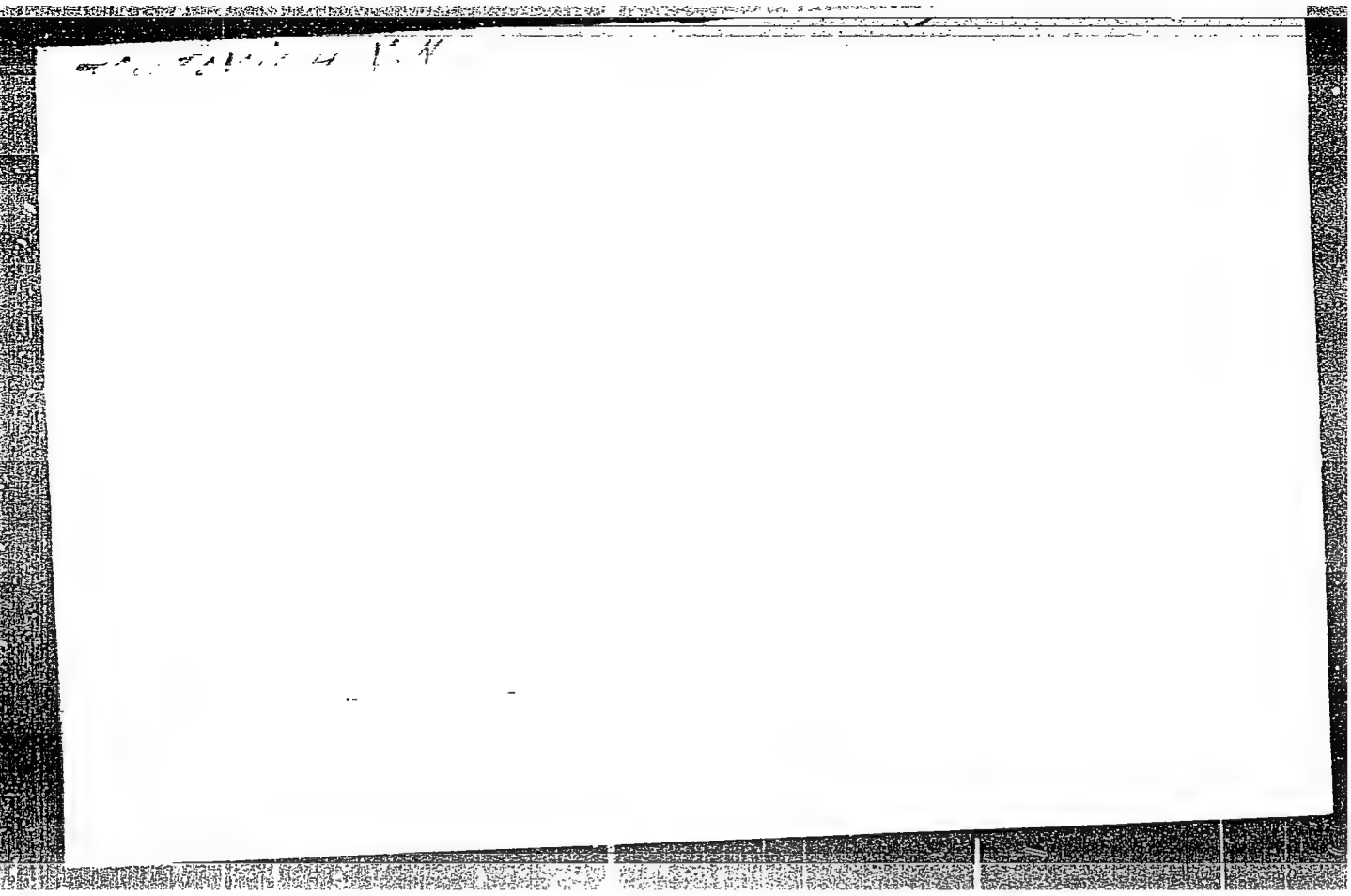

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TSYTSAREV, K.

Workmen become engineers. Sov. profsoiuzy 18 no.19:23-25 O '62.
(MIRA 15:9)

1. Predsedatel' Tomskogo oblastnogo soveta professional'nykh soyuzov.
(Tomsk Province--Trade unions)
(Tomsk Province--Evening and continuation schools)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

BOGOSLOVSKIY, Boris Borisovich. Prinimali uchastiye: VOSKRESENSKIY, K.A., dotsent; TSYTSARIN, G.V., kand.geograf.nauk. PETROVA, K.A., red.; GEORGIYEVA, G.I., tekhn.red.

[Limnology] Ozerovedenie. Moskva, Izd-vo Mosk.univ., 1960. 334 p. (MIRA 14:4)

(Limnology)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSARIN, G.V.

Determining the underground component of the runoff of rivers from hydrochemical data. Sbor. rab. po gidrol. no.1:87-90 '59. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet.
(Runoff)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSARIN, G.V.

Use of hydromechanical data for determining the underground component of streamflow. Biul.MOIP. Otd.geol. 31 no.4:108-109 Jl-Ag '56. (MLRA 9:12)

(Stream measurements)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

MAKSIMOVICH, Georgiy Alekseyevich; TSYTSARIN, G.V., redaktor; PERVAKOV, I.L., redaktor; MAL'CHEVSKIY, G.N., redaktor [illegible]; KOSHELEVA, S.M., tekhnicheskiy redaktor.

[The chemical geography of inland waters] Khimicheskaia geografiia vod sushi. Moskva, Gos.izd-vo geogr. lit-ry, 1955. 327 p. (MIRA 8:4)
(Hydrology) (Water, Underground)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSARIN, G. V.

Lakes.

Steep-banked mountain lakes. Vop.geog. 26, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

AUTHOR: Tsytsarin, G.V. SOV/5-58-5-15/20

TITLE: The Borate Waters of the Trans-Emba Channels (Boratnyye vody zaembenskikh protok)

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody, Otdel geologicheskiy, 1958, p 156 (USSR)

ABSTRACT: The author sets forth some of the theses of the report he read on 10 April, 1958 in the Hydrogeological Section of the Society. He investigated the presence of Boron (B) in the channels of the Emba river near its estuary on the eastern shore of the Caspian Sea. According to him, the presence and concentration of boron and other dispersed elements in the channels of the river is brought about by the gradual evaporation of the water. He recommends further prospecting for a possible industrial extraction of boron.

Card 1/1

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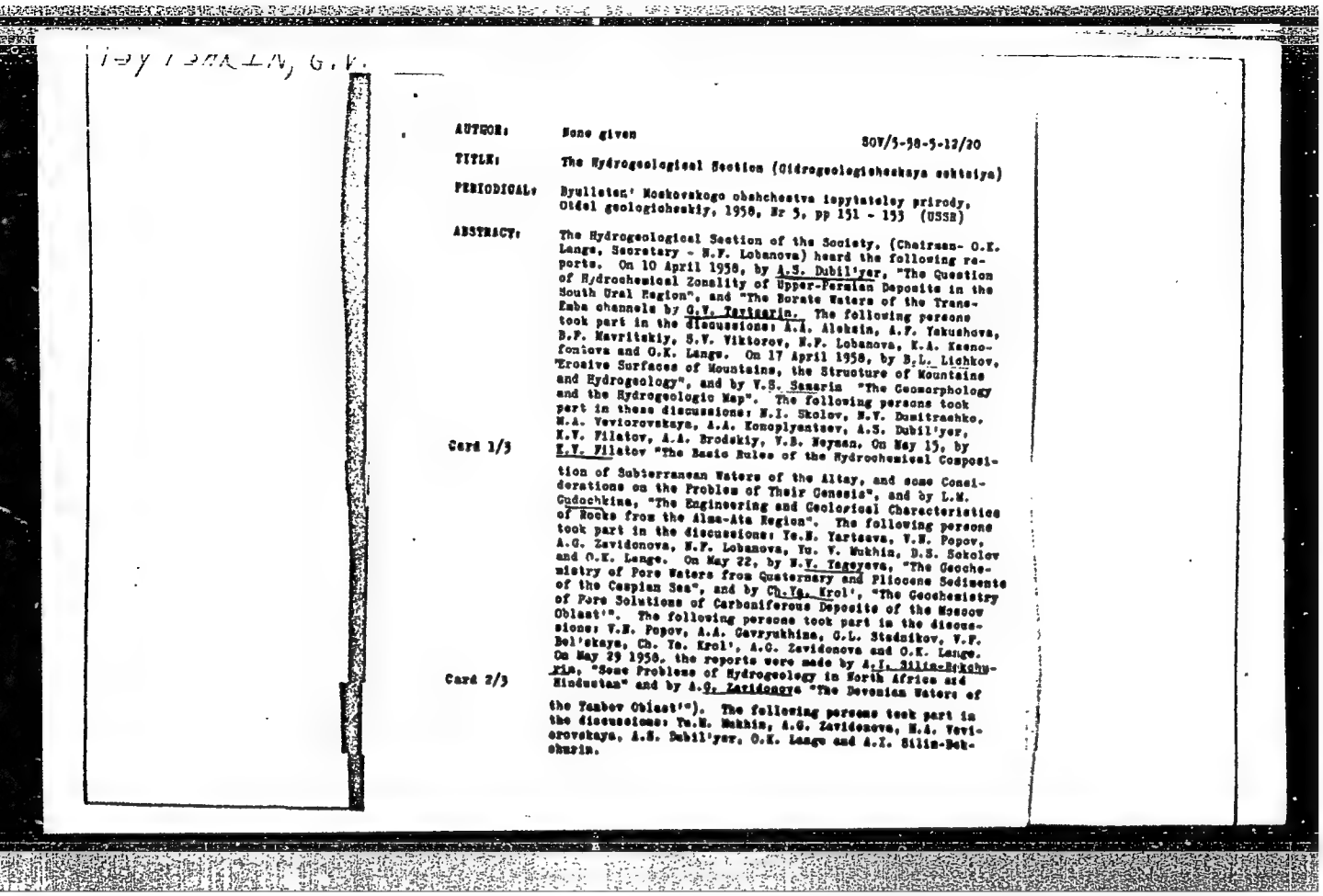

IVANOV, G.V.

AUTHOR: None given SOV/5-58-5-12/20

TITLE: The Hydrogeological Section (Gidrogeologicheskaya sektsiya)

PERIODICAL: Byulleten' Moskovskogo obshchestva ispytateley prirody, Otdel geologicheskiy, 1958, Nr 5, pp 151 - 153 (USSR)

ABSTRACT: The Hydrogeological Section of the Society, (Chairman- O.K. Lange, Secretary - N.F. Lobanova) heard the following reports. On 10 April 1958, by A.S. Dubil'yer, "The Question of Hydrochemical Zonality of Upper-Permian Deposits in the South Ural Region", and "The Borate Waters of the Trans-Emba channels by G.V. Tsvingrin. The following persons took part in the discussions: A.I. Alekain, A.F. Yakushova, B.P. Mavritskiy, S.V. Viktorov, N.F. Lobanova, K.A. Kasnofontova and O.K. Lange. On 17 April 1958, by B.L. Lichkov, "Erosive Surfaces of Mountains, the Structure of Mountains and Hydrogeology", and by V.S. Samarin "The Geomorphology and the Hydrogeologic Map". The following persons took part in these discussions: N.I. Skolov, N.V. Dumitrashko, M.A. Vaviorovskaya, A.A. Konoplyantsev, A.S. Dubil'yer, K.V. Filatov, A.A. Brodskiy, V.B. Neyman. On May 15, by K.V. Filatov "The Basic Rules of the Hydrochemical Composition of Subterranean Waters of the Altay, and some Considerations on the Problem of Their Genesis", and by L.N. Gudochkina, "The Engineering and Geological Characteristics of Rocks from the Alma-Ata Region". The following persons took part in the discussions: Ye.M. Yartseva, V.N. Popov, A.G. Zavidonova, N.F. Lobanova, Yu. V. Mukhin, D.S. Sokolov and O.K. Lange. On May 22, by N.V. Tagayeva, "The Geochemistry of Pore Waters from Quaternary and Pliocene Sediments of the Caspian Sea", and by Ch.Ya. Krol', "The Geochemistry of Pore Solutions of Carboniferous Deposits of the Moscow Oblast'". The following persons took part in the discussions: V.N. Popov, A.A. Gavryukhina, G.L. Stadnikov, V.F. Bel'skaya, Ch. Ya. Krol', A.G. Zavidonova and O.K. Lange. On May 29 1958, the reports were made by A.I. Silin-Bekchurin, "Some Problems of Hydrogeology in North Africa and Hindustan" and by A.G. Zavidonova "The Devonian Waters of the Tsnbov Oblast'"). The following persons took part in the discussions: Ye.M. Mukhin, A.G. Zavidonova, M.A. Vaviorovskaya, A.S. Dubil'yer, O.K. Lange and A.I. Silin-Bekchurin.

Card 1/3

Card 2/3

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSARIN, G.V., referent

Boron content in waters of trans-Emba gullies. Biul.MOIP. Otd.geol.33 no.5:156 S-O '58. (MIRA 12:1)
(Caspian Sea region--Boron)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSARIN, G. V.

Lakes

Steep-banked mountain lakes. Vop. geog. 26, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1952 1953, Uncl.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSARIN, G. V.

Physical Geography

Steep-banked mountain lakes., Vop. geog., 26, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1952 1953, Uncl.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSARIN, G.V.; SHINKAR, G.G.

Optical instrument for measuring silt density and possibilities for using it in hydrologic research. Vest.Mosk. un. Ser. 5: Geog. 17 no.1:67-68 Ja-F '62. (MIRA 16:7)
(Silt) (Optical instruments)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

AKIMOCHKIN, P.V.; TSYTSARKIN, V.N.; RAZIN, V.N.

Results of experimental investigations on selecting compositions of equivalent materials. Vop. gor. davl. no.7:66-69 '61. (MIRA 18:7)

1. Tomskiy politekhnicheskiy institut im. S.M.Kirova.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

KUSTENYA, M.V.; TSYTSARK-II, V.N.

Reliability of supports in a zone of bearing pressure. Trudy gor. daval. no.2:64-71 '64. (MIRA 18:2)

1. Institut gornogo dela Sibirskogo otdeleniya AN SSSR.

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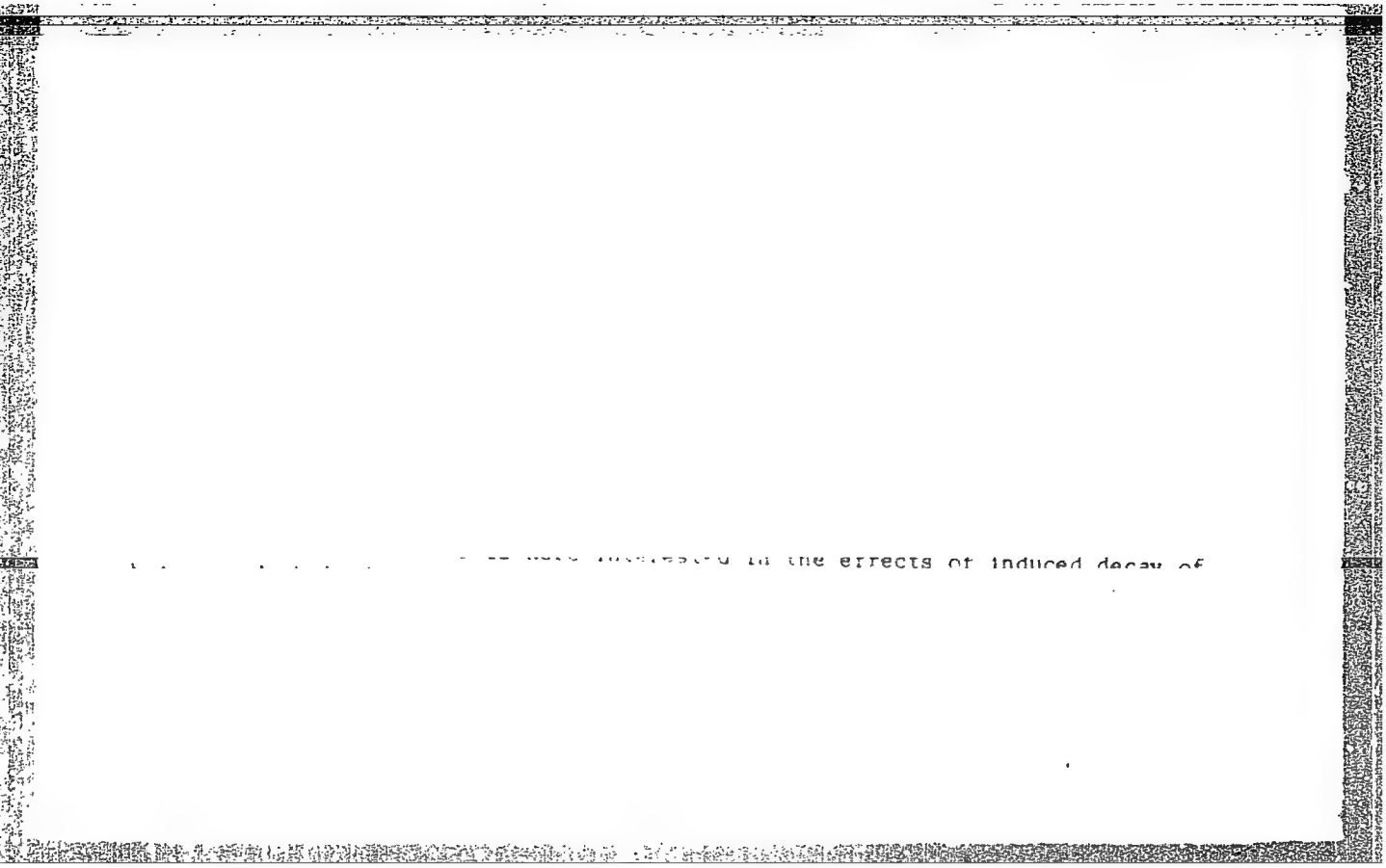

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSARIN, V. S.

Kal'kulyatsiya i proverka tsen v stolovoy (Calculation and checking of prices in tables) Moskva, Gostorgizdat, 1953.
44p. tables.

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APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

RODKINA, B.S.; TSYTSARKINA, T.N.; CHERED NICHENKO, L.M. (Khar'kov)

Antitoxin function of the liver in cancer. Vrach.delo no.12: 1273-1276 D '56. (MIRA 12:10)

1. Otdel patofiziologii (zav. - zasluzhennyy deyatel' nauki, prof.S.G.Genes) Ukrainskogo instituta eksperimental'noy endokrinologii i khirurgicheskaya klinika (zav. - zasl.deyatel' nauki, prof.G.M.Gurevich) Ukrainskogo instituta rentgeno-radio-onkologii.

(CANCER) (LIVER)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

LEBEDEVA, L.P.; KRYSIN, B.T.; KOLPAKOV, Ya.V.; IGNATOV, L.N.;
MIKHAYLOVSKIY, V.A.; SMIRNOV, G.G.; TSYTSENKO, M.V.

Experimental production of iron-base friction ceramic metals.
Poroshk. met. 5 no.8:96-102 Ag '65. (MIRA 18:9)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

L 57596-65 EWG(j)/EWT(d)/EWT(l)/EWP(e)/EWT(m)/EWP(w)/EPF(c)/EWG(s)-2/EWP(i)/EWG(v)/EWA(d)/EWP(v)/EPR/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(h) Pe-5/Pf-4/Pr-4/Ps-4/Peb/Pw-4 JD/HW/ER/DJ/RM

ACCESSION NR: AP5017875 UR/0286/65/000/011/0118/0119 621.825

AUTHOR: Kashchenko, I. M.; Krysin, B. T.; Kolpakov, Ya. V.; Smirnov, G. G.; Mikhaylovskiy, V. A.; Tsytsenko, M. V.; Lebedeva, L. P.; Vinokurov, V. I.; Levin, M. M.; Edel'man, M. I.

TITLE: Method for producing friction parts from powder components. Class 47, No. 171702

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 11, 1965, 118-119

TOPIC TAGS: aircraft brake, friction part, powder metallurgy

ABSTRACT: An Author Certificate has been issued for a method of producing friction parts (e.g., brake-unit parts) for aircraft from powder components. To reduce wear, the mixture contains 60—70% iron, 13—16% copper, 8—10% barium sulfate, 3—7% graphite, 3—5% asbestos, and 2—5% silicon oxide. The mixture is compact molded at a pressure of 5.8 t/cm^2 and sintered at a temperature of 1060C and a pressure of 25 kg/cm^2. [LB]

Card 1/2

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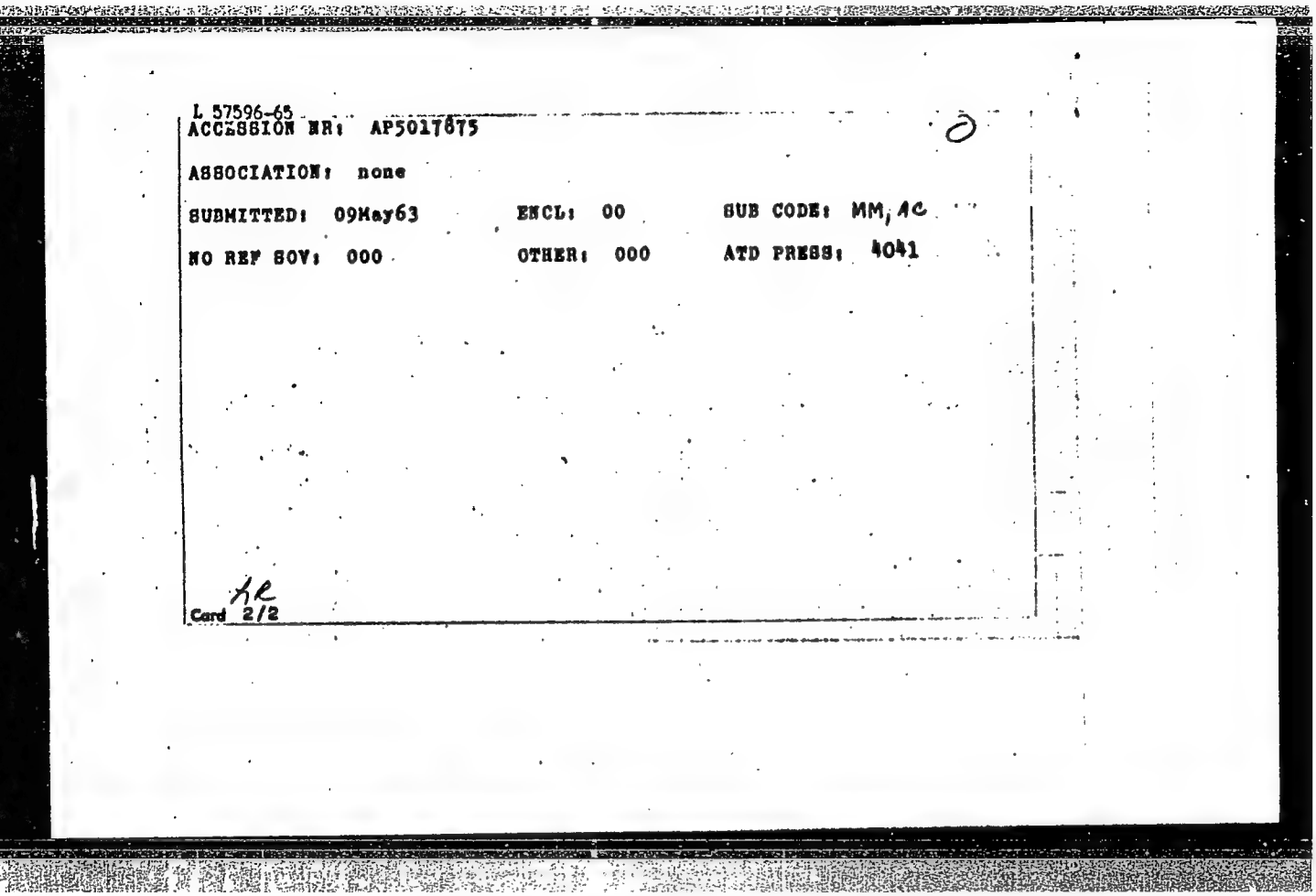

L 57596-65
ACCESSION NR: AP5017875

ASSOCIATION: none

SUBMITTED: 09May63 ENCL: 00 SUB CODE: MM, AC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4041

Card 2/2

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSENKO, V.I., inzhener.

Modification of the bearing of the SM-170 coal crusher. Energetik 5 no.2:9-10 F '57. (MLRA 10:3)
(Pulverizers)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

Tsytsenko, V. I.

AID P - 4065

Subject : USSR/Power

Card 1/1 Pub. 26 - 23/33

Author : Tsytsenko, V. I., Eng.

Title : Standardizing the fuel mill unit types.

Periodical : Elek. sta., 12, 52, 1955

Abstract : The article describes the conversion of fuel mills to one type in order to facilitate repair and mounting work. One diagram.

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSENKO, V.I., inzhener.

New regulating valve for continuous blowdown of boilers.
Elek.sta. 27 no.7:51-52 Jl '56. (MLRA 9:10)

(Boilers--Accessories)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSENKO, V. I.

AID P - 3705

Subject : USSR/Electricity

Card 1/1 Pub. 29 - 10/25

Author : Tsytsenko, V. I., Eng.

Title : Replacement of cast-iron nozzle turbine segments with steel

Periodical : Energetik, 12, 15-16, D 1955

Abstract : The author describes the replacement work done with a AEG, 10,000-kw turbine where cast-iron nozzle segments were replaced with steel ones. One drawing.

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSENKO, V.I., inzhener.

Standardization of impact mills. Elek.sta. 26.no.12:52 D '55.
(Coal, Pulverized) (MLRA 9:4)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSENKO, V.I., inzh.

First outdoor-type solid fuel power plant of the U.S.S.R.
Elek. sta. 35 no.3:5-8 Mr '64. (MIRA 17:6)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSINKO, V.I., inzhener.

Replacing cast-iron turbine nozzle segments with steel ones.
Energetik 3 no.12:15-16 D '55. (MLRA 9:2)
(Nozzles)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

USSR / Human and Animal Morphology (Normal and Pathological). Nervous System. Peripheral Nervous System. S

Abs Jour : Ref Zhur - Biologiya, No 4, 1959, No. 16929

Author : Slobodin, Z. G.; Tsytsorina, N. A.
Inst : Karaganda Medical Institute
Title : On Innervation of the Wrist and Foci

Orig Pub : Tr. Karagandinsk. med. in-ta, 1957, 1, No 2, 133-134

Abstract : No abstract given

Card 1/1

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYUMAN, V. P.

Promising types of loading and unloading machinery. Mekh. sil'. hosp. 12 no.10:18 O '61. (MIRA 14:11)

1. Khar'kovskaya issledovatel'skaya stantsiya Ukrainskogo nauchno-issledovatel'skogo instituta mekhanizatsii i elektrifikatsii sel'skogo khozyaystva.
(Loading and unloading)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYTSURIN, E. I.

Tsytsurin, E. I., Wave graphs, Sb. rabot po geofiz. i meteorol metodam izmereniy i priboram (Collection of works on geophysics and meteorological methods of measurements and instruments), Leningrad, 1958, p 94-96; (RZhGeofiz 11/59-11128)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

KHASIN, A.V.; TSYUBLEVSKIY, A.M.

Adsorption drying of ethylene. Khim.prom. no.1:35-38 Ja '63. (MIRA 16:3)

(Ethylene--Drying)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

BEL'KEVICH, P.I.; TSYUBUL'KIN, V.M.; ~~KURKEVICH~~, Ye.A.

Study of peat asphaltenes by infrared spectroscopy. Trudy Inst. torf. AN BSSR 9:296-300 '60. (MIRA 14:2)
(Peat) (Asphaltnes--Spectra)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYUKAYTIS, G.K.; YUTSIS, A.P.

Two-configurational approximation in the case of $1s^2 2s^2 2p3s$ configuration of carbon atoms. Zhur.eksp. i teor.fiz. 25 no.6: 679-682 D '53. (MLRA 7:10)
(Carbon) (Atoms)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYUKHNO, Z. I.

Articular complications in DOCA therapy of adrenal insufficiency. Klin. med., Moskva 30 no. 5:77-78 May 1952. (CLML 22:3)

1. Candidate Medical Sciences. 2. Of the Department of Endocrinology (Head -- Prof. M. A. Kopelevich), Ukrainian Institute for the Advanced Training of Physicians, Khar'kov.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

T-8

USSR/Human and Animal Physiology. Internal Secretion

Abs Jour : Ref Zhur - Biol., No 14, 1958, No 65552

Author : ~~Tsyukhno Z.I.~~
Inst : Ukrainian Scientific Research Institute of Clinical Medicine
Title : Capilleroscopic Data in Diabetes Mellitus.

Orig Pub : Materialy po obmenu nauchn. inform. Ukr. in.-i. in-t klinich. meditsiny, 1957, Vyp. 1, 143-145

Abstract : No abstract

Card : 1/1

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYUKHNO, Z.I.

Oxyhemometric data in diabetes mellitus. Trudy Ukr. nauch.-issl. inst. eksper. endok. 19:48-58 '64. (MIRA 18:7)

1. Iz klinicheskogo otdela Ukrainskogo instituta eksperimental'noy endokrinologii i kafedry endokrinologii Ukrainskogo instituta usovershenstvovaniya vrachey.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

TSYUKHNO, Z.I.

Course of cardiovascular diseases in diabetes mellitus. Trudy Ukr. nauch.-issl. inst. eksper. endok. 19:67-72 '64. (MIRA 18:7)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7

ZHUROVA, M.V.; TSYUKHNO, Z.I.

Hirsutism in the porphyrin disease. Trudy Ukr. nauch.-issl. inst. eksper. endok. 19:393-396 '64. (MIRA 18:7)

1. Iz klinicheskogo otdela Ukrainskogo instituta eksperimental'noy endokrinologii.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757320018-7"